U.S. Patent No. 5,722,162 discloses fabricating a pillar by electroplating the pillar on a selected portion of an underlying metal exposed by an opening in photoresist and then stripping the photoresist. Although it is convenient to use photoresist to define the location of the pillar, electroplating the pillar in an opening in the photoresist has certain drawbacks. First, the photoresist is selectively exposed to light that initiates a reaction in regions of the photoresist that correspond to the desired pattern. Since photoresist is not fully transparent and tends to absorb the light, the thicker the photoresist, the poorer the penetration efficiency of the light. As a result, the lower portion of the photoresist might not receive adequate light to initiate or complete the intended photo-reaction. Consequently, the bottom portion of the opening in the photoresist might be too narrow, causing a pillar formed in the narrowed opening to have a diameter that decreases with decreasing height. Such a pillar has a high risk of fracturing at its lower portion in response to thermally induced stress. Second, if the photoresist is relatively thick (such as 100 microns or more), the photoresist may need to be applied with multiple coatings and receive multiple light exposures and bakes, which increases cost and reduces yield. Third, if the photoresist is relatively thick, the electroplated pillar may be non-uniform due to poor current density distribution in the relatively deep opening. As a result, the pillar may have a jagged or pointed top surface instead of a flat top surface that is better suited for providing a contact terminal for the next level assembly.

Replace the paragraph at page 18, lines 3-18 with the following paragraph:

**FIGS. 1P, 2P** and **3P** are cross-sectional, top and bottom views, respectively, of the semiconductor chip assembly after ball bond connection joint 80 is formed. Ball bond connection joint 80 is formed in through-hole 62, extends through opening 60 in adhesive 54, and contacts pad 78 and routing line 42, thereby electrically connecting pad 78 and routing line 42. Ball bond connection joint 80 is composed of gold and is formed by thermosonic wire bonding, although thermocompression wire bonding can also be used. Ball bond connection joint 80 fills openings 52 and 60 and extends into opening 58 but does not contact insulative base 40. Thus, the sidewalls of opening 58 remain exposed and devoid of metal. Moreover, ball bond connection joint 80 only contacts portions of pad 78, routing line 42 and adhesive 54 exposed by through-hole 62 and is the only electrical conductor in through-hole 62. Ball bond connection joint 80 provides a robust, permanent electrical connection between pad 78 and routing line 42.

Q3 Further details about a ball bond connection joint are described in U.S. Application Serial No. 09/665,928, filed September 20, 2000 by Charles W.C. Lin entitled "Semiconductor Chip Assembly with Ball Bond Connection Joint" which is incorporated by reference.

Replace the paragraph at page 18, line 31 to page 19, line 13 with the following paragraph:

The conductive trace can have various shapes and sizes and can be various conductive metals including copper, gold, nickel, aluminum, tin, combinations thereof, and alloys thereof. Of common metallic materials, copper has especially low resistivity and cost. Furthermore, those skilled in the art will understand that in the context of a support circuit, a copper conductive trace is typically a copper alloy that is mostly copper but not pure elemental copper, such copper-zirconium (99.9% copper), copper-silver-phosphorus-magnesium (99.7% copper), or copper-tin-iron-phosphorus (99.7% copper). The conductive trace may be compatible with receiving the connection joint before the opening in the routing line is formed, thereby obviating the need for spot plated metal on the routing line before the connection joint is formed. The conductive trace may function as a signal, power or ground layer depending on the purpose of the associated chip pad. The conductive trace need not necessarily extend above the top surface of the insulative base, and the top portion of the conductive trace can be a ball, a pad, or a pillar (columnar post). A pillar is particularly well-suited for reducing thermal mismatch related stress in the next level assembly.

Q4

Replace the paragraph at page 23, lines 22-26 with the following paragraph:

Q5

Various changes and modifications to the presently preferred embodiments described herein will be apparent to those skilled in the art. For instance, the materials, dimensions and shapes described above are merely exemplary. Such changes and modifications may be made without departing from the spirit and scope of the present invention as defined in the appended claims.